

AMENDMENTS TO THE CLAIMS

1. **(Currently Amended)** A mutant mammalian G [-] protein-coupled receptor, having an amino acid sequence which differs from a wild type G protein-coupled receptor having a wild type amino acid sequence comprising an amino acid motif (X₁X₂X₃X₄) [[proximal to the carboxy terminal end]] closer to the C-terminal end than the N-terminal end of said wild type amino acid sequence, wherein:

X₁ denotes an amino acid residue at position 1 of said motif and is selected from the group consisting of Phe, Leu, Val, and Tyr;

X₂ denotes an amino acid residue at position 2 of said motif and is selected from the group consisting of Phe, Lys and Gln;

X₃ denotes an amino acid residue at position 3 of said motif and is selected from the group consisting of Leu, Arg, Glu, Asn, Gln, Ser, Ala, [[Leu]] ; and

X₄ denotes an amino acid residue at position 4 of said motif and is selected from the group consisting of Ala, Cys, Asp, Glu, Gly, Ser, Thr and Tyr; and

wherein said mutant receptor comprises a seventh transmembrane domain with a carboxy terminal end;

at least one point mutation at a position in said amino acid motif;
wherein upon interaction with a ligand to modulate a signal transduction pathway in a cell, a signal generated by said mutant receptor is greater than a signal generated upon interaction of said ligand with a wild type G protein-coupled receptor.

2. **(Original)** The receptor of claim 1, wherein said cell is a yeast cell.

3. **(Original)** The receptor of claim 2, wherein said receptor acts as a surrogate for an endogenous yeast pheromone receptor in a pheromone response pathway of said cell.

4. **(Original)** The receptor of claim 2, wherein said cell belongs to the species *Saccharomyces cerevisiae*.

5. **(Original)** The receptor of claim 1, wherein said cell is a mammalian cell.

6. **(Original)** The receptor of claim 1, wherein said receptor containing said amino acid motif with no point mutation thereon generates no detectable signal.

7. **(Original)** The receptor of claim 1, wherein said point mutation comprises mutagenization at position 4 of said amino acid motif to Arg or to Lys.

8. **(Previously Presented)** The receptor of claim 1, wherein said wild type G protein coupled receptor is IL8A receptor.

9. **(Original)** The receptor of claim 8, wherein said point mutation is selected from the group consisting of : Arg to Trp at position 73, Met to Ile at position 246; and Gly to Arg at position 320.

10. **(Original)** The receptor of claim 8, wherein said ligand is interleukin 8 (IL8) or melanoma growth-stimulating activity-alpha (MGSA/GRO α).

11. **(Previously Presented)** The receptor of claim 1, wherein said wild type G protein coupled receptor is a human receptor.

12. **(Previously Presented)** The receptor of claim 11, wherein said wild type G protein coupled receptor is selected from the group consisting of human galanin-1 receptor, somatostatin receptor type I, somatostatin receptor type II, somatostatin receptor type III, and human nociceptin receptor.

13. **(Previously Presented)** The receptor of claim 12, wherein said wild type G protein coupled receptor is human galanin-1 receptor.

14. **(Previously Presented)** The receptor of claim 13, comprising an amino acid sequence LAYSNSSVNPIIYAFLSEN(FRKR)YKQV (SEQ ID NO:1) wherein said mutant amino acid motif within said sequence is (FRKR).

15-42. **(Cancelled)**

43. **(Previously Presented)** The receptor of claim 1, wherein said wild type G protein coupled receptor is a member of the rhodopsin family of receptors.

44. **(Currently Amended)** A mutant mammalian IL8A receptor having an amino acid sequence which differs from a wild type IL8A receptor having a wild type amino acid sequence comprising an amino acid motif (X₁X₂X₃X₄) [[proximal to the carboxy terminal end]] closer to the C-terminal end than the N-terminal end of said wild type amino acid sequence, wherein:

X₁ denotes an amino acid residue at position 1 of said motif and is selected from the group consisting of Phe, Leu, Val, and Tyr;

X₂ denotes an amino acid residue at position 2 of said motif and is selected from the group consisting of Phe, Lys and Gln;

X₃ denotes an amino acid residue at position 3 of said motif and is selected from the group consisting of Leu, Arg, Glu, Asn, Gln, Ser, Ala, [[Leu]] ; and

X₄ denotes an amino acid residue at position 4 of said motif and is selected from the group consisting of Ala, Cys, Asp, Glu, Gly, Ser, Thr and Tyr; and

wherein said mutant receptor comprises a seventh transmembrane domain with a carboxy terminal end; and

at least one point mutation at a position in said amino acid motif, wherein said point mutation is selected from the group consisting of: Arg to Trp at position 73, Met to Ile at position 246, and Gly to Arg at position 320, wherein upon interaction with a ligand to modulate a signal transduction pathway in a cell, a signal generated by said mutant receptor is greater than a signal generated upon interaction of said ligand with a wild type IL8A receptor.

45. **(Previously Presented)** The receptor of claim 44, wherein said cell is a yeast cell.

46. **(Previously Presented)** The receptor of claim 45, wherein said receptor acts as a surrogate for an endogenous yeast pheromone receptor in a pheromone response pathway of said cell.

47. **(Previously Presented)** The receptor of claim 45, wherein said cell belongs to the species *Saccharomyces cerevisiae*.

48. **(Previously Presented)** The receptor of claim 44, wherein said cell is a mammalian cell.

49. **(Previously Presented)** The receptor of claim 44, wherein said receptor containing said amino acid motif with no point mutation therein generates no detectable signal.

50. **(Previously Presented)** The receptor of claim 44, wherein said point mutation comprises mutagenization at position 4 of said amino acid motif to Arg or to Lys.

51. **(Previously Presented)** The receptor of claim 44, wherein said ligand is interleukin 8 (IL8) or melanoma growth-stimulating activity-alpha (MGSA/GRO α).

52. **(Currently Amended)** A mutant galanin receptor-1 having an amino acid sequence which differs from a wild type galanin receptor-1 having a wild type amino acid sequence comprising an amino acid motif (X₁X₂X₃X₄) [[proximal to the carboxy terminal end]] closer to the C-terminal end than the N-terminal end of said wild type amino acid sequence, wherein:

X₁ denotes an amino acid residue at position 1 of said motif and is selected from the group consisting of Phe, Leu, Val, and Tyr;

X₂ denotes an amino acid residue at position 2 of said motif and is selected from the group consisting of Phe, Lys and Gln;

X₃ denotes an amino acid residue at position 3 of said motif and is selected from the group consisting of Leu, Arg, Glu, Asn, Gln, Ser, Ala, [[Leu]] ; and

X₄ denotes an amino acid residue at position 4 of said motif and is selected from the group consisting of Ala, Cys, Asp, Glu, Gly, Ser, Thr and Tyr; and

wherein said mutant receptor comprises a seventh transmembrane domain with a carboxy terminal end; and

at least one point mutation in said amino acid motif comprising Gly to Ala at position 320, wherein upon interaction with a ligand to modulate a signal transduction pathway in a cell, a signal generated by said mutant receptor is greater than a signal generated upon interaction of said ligand with a wild type galanin receptor-1.

53. **(Currently Amended)** The mutant galanin receptor-1 of claim 52, [[amino acid motif of claim 52,]] wherein;

X₁ denotes an amino acid residue at position 1 of said motif and is Phe;

X₂ denotes an amino acid residue at position 2 of said motif and is selected from the group consisting of Arg;

X₃ denotes an amino acid residue at position 3 of said motif and is selected from the group consisting of Lys; and

X₄ denotes an amino acid residue at position 4 of said motif and is Ala, Cys, Asp, Glu, Gly, Ser, Thr and Tyr.

54. **(Previously Presented)** The receptor of claim 52 or 53, wherein said cell is a yeast cell.

55. **(Previously Presented)** The receptor of claim 54, wherein said receptor acts as a surrogate for an endogenous yeast pheromone receptor in a pheromone response pathway of said cell.

56. **(Previously Presented)** The receptor of claim 54, wherein said cell belongs to the species *Saccharomyces cerevisiae*.

57. **(Previously Presented)** The receptor of claim 52 or 53, wherein said cell is a mammalian cell.

58. **(Previously Presented)** The receptor of claim 52 or 53, wherein said receptor containing said amino acid motif with no point mutation therein generates no detectable signal.

59. **(Previously Presented)** The receptor of claim 52 or 53, wherein said receptor comprises mutagenization at position 4 of said amino acid motif to Arg or to Lys.

60. **(New)** A mutant mammalian G protein-coupled receptor having an amino acid sequence which differs from a wild type G protein-coupled receptor, said wild type G protein-coupled receptor selected from the group consisting of human galanin-1 receptor, somatostatin receptor type I, somatostatin receptor type II, somatostatin receptor type III, interleukin8 (IL8) and human nociceptin receptor, said wild type mammalian G protein-coupled receptor having an amino acid sequence comprising an amino acid motif (X₁X₂X₃X₄) closer to the C-terminal end than the N-terminal end of said wild type amino acid sequence, wherein:

X₁ denotes an amino acid residue at position 1 of said motif and is selected from the group consisting of Phe, Leu, Val, and Tyr;

X₂ denotes an amino acid residue at position 2 of said motif and is selected from the group consisting of Phe, Lys and Gln;

X₃ denotes an amino acid residue at position 3 of said motif and is selected from the group consisting of Leu, Arg, Glu, Asn, Gln, Ser, Ala; and

X₄ denotes an amino acid residue at position 4 of said motif and is selected from the group consisting of Ala, Cys, Asp, Glu, Gly, Ser, Thr and Tyr; and

wherein said mutant receptor comprises a seventh transmembrane domain with a carboxy terminal end;

at least one point mutation at a position in said amino acid motif;

wherein upon interaction with a ligand to modulate a signal transduction pathway in a cell, a signal generated by said mutant receptor is greater than a signal generated upon interaction of said ligand with a wild type G protein-coupled receptor.

61. **(New)** The mutant mammalian G protein-coupled receptor of claim 1, wherein said amino acid motif commences 5-10 amino acid residues from the carboxy terminal end of said wild type amino acid sequence.

62. **(New)** The mutant mammalian G protein-coupled receptor of claim 44, wherein said amino acid motif commences 5-10 amino acid residues from the carboxy terminal end of said wild type amino acid sequence.

63. **(New)** The mutant mammalian G protein-coupled receptor of claim 52, wherein said amino acid motif commences 5-10 amino acid residues from the carboxy terminal end of said wild type amino acid sequence.

64. **(New)** The mutant mammalian G protein-coupled receptor of claim 1, wherein said wild type receptor is a member of the rhodopsin receptor family.

65. **(New)** The mutant mammalian G protein-coupled receptor of claim 1, wherein said wild type receptor is a member of the chemokine receptor family.

66. **(New)** The mutant mammalian G protein-coupled receptor of claim 65, wherein said receptor is a member of the chemokine α receptor family.